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EXAMINER

LUU, CUONG V

ART UNIT PAPER NUMBER

2128

DATE MAILED: 09/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/758,452

Applicant(s)

DELASHMIT ET AL.

Examiner

Cuong V. Luu

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-63 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-63 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>9/2/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims 1-63 are pending. Claims 1-63 have been examined. Claims 1-63 have been rejected.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1 and 14 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

1. As per claims 1 and 14, they are rejected under 35 U.S.C. 101 since the claimed invention is directed to claiming software as recited in the preamble, "a method for modeling an object in software".
2. Claim 2-23 and 45-63 inherit the same defective.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Regarding claim 20, the phrase "wherein the comprise at least one of" renders the claim indefinite because it is unclear what the applicants mean. For the purpose of examining the claim, the Examiner interprets it as "wherein the images comprise at least one of".

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-5, 7-47, and 49-63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mueller et al, herein Mueller, (U.S. Pub. 2003/0071194 A1) in view of the applicants' admitted prior art, herein AAPA.

4. As per claim 1, Mueller teaches a method for modeling an object in software, comprising:

Generating a three-dimensional geometry of the object from a plurality of points obtained from a plurality of images of the object, the images having been acquired from a plurality of perspectives (p. 3, paragraphs 0049-0050); and

Generating a three-dimensional model from the three-dimensional geometry (p. 3, paragraphs 0049-0050)

But does not teach for integration into an object recognition system.

The AAPA teaches this feature (p. 1, paragraphs 0004 and 0006).

It would have been obvious to one of ordinary skill in the art to combine the teachings of Mueller and AAPA. AAPA's teachings would have provided the ability to automatically, and quickly view and classify objects (AAPA, p1, paragraph 0004).

5. As per claim 2, Mueller teaches creating the three-dimensional geometry includes generating the three-dimensional geometry of the object from a plurality of points obtained from a plurality of two-dimensional images of the object (p. 5, paragraph 0064).

6. As per claim 3, Mueller teaches creating the three-dimensional geometry includes generating a set of three-dimensional data from a set of two-dimensional images (p. 5, paragraph 0065).

7. As per claim 4, Mueller teaches generating the set of three-dimensional data includes:

Selecting a plurality of points in each of the two-dimensional images (p. 5, paragraph 0065);

Calibrating the relationship between the images from selected points that are co-located in more than one of the two-dimensional images (p. 120, paragraph 0120. The teachings of calibration using objects of high textual contrast to identify 3D calibration points to integrate images is regarded as calibrating the relationship between the images from selected points that are co-located in more than one of the two-dimensional images); and

Mapping the selected points in the calibrated two-dimensional images into a three-dimensional space (p. 5, paragraph 0065).

8. As per claim 5, Mueller teaches verifying the calibration between the images (p. 5, paragraph 0065. The teaching of outputting coordinates of trackable points and their color value is regarded as a way of verifying the calibration between the images since they are used to identify and match points co-located in more than one images).
9. As per claim 7, the discussions in claim 4 inherit these limitations. They are, therefore, rejected for the same reasons.
10. As per claim 8, Mueller teaches defining the three-dimensional space includes creating rough object geometries (p. 5, paragraph 0065. Mueller's teaching of generating a regular array of points representing a three dimensional surface is regarded as creating rough object geometries).
11. As per claim 9, the discussions in claim 2 inherit these limitations. They are, therefore, rejected for the same reasons.
12. As per claim 10, the discussions in claim 1 inherit these limitations. They are, therefore, rejected for the same reasons.
13. As per claim 11, Mueller teaches generating the surface geometries includes connecting the three-dimensional data to planar curves (p. 5, paragraph 0065. Mueller's teaching of generating 3-D surface data from a set of represented by a regular array of points is regarded as connecting the three-dimensional data to planar curves).

14. As per claim 12, these limitations have already been discussed in claims 1 and 2. They are, therefore, rejected for the same reasons.
15. As per claim 13, these limitations have already been discussed in claim 4. They are, therefore, rejected for the same reasons.
16. As per claim 14, these limitations have already been discussed in claim 7. They are, therefore, rejected for the same reasons.
17. As per claim 15, these limitations have already been discussed in claim 9. They are, therefore, rejected for the same reasons.
18. As per claim 16, Mueller teaches generating the three-dimensional model from the three-dimensional geometry includes:
- Rotating the three-dimensional geometry (p. 3, paragraph 0050); and
 - Generating a plurality of synthetic signatures of the model from a plurality of perspectives at the three-dimensional geometry is rotated (p. 11, paragraph 121).
19. As per claim 17, Mueller teaches generating the synthetic signatures comprises generating a plurality of synthetic LADAR signatures (The signatures discussed in claim 16 is generated using a LADAR system, so they are regarded as LADAR signatures).
20. As per claim 18, these limitations have already been discussed in claim 10. They are, therefore, rejected for the same reasons.

21. As per claim 19, these limitations have already been discussed in claim 2. They are, therefore, rejected for the same reasons.

22. As per claim 20, Mueller teaches the images comprise laser radar images (p. 3, paragraph 0049; and p. 13, paragraph 0146).

23. As per claim 21, Mueller teaches generating the three-dimensional model includes generating a three-dimensional model of LADAR returns from the object (p. 3, paragraph 0049; and p. 13, paragraph 0146).

24. As per claim 22, the AAPA teaches integrating generated model into a target recognition system (AAPA, p. 2, lines 15-17 and 20-25).

25. As per claim 23, these limitations have already been discussed in claim 22. They are, therefore, rejected for the same reasons.

26. As per claim 24, these limitations have already been discussed in claim 1. They are, therefore, rejected for the same reasons.

27. As per claim 25, these limitations have already been discussed in claim 2. They are, therefore, rejected for the same reasons.

28. As per claim 26, these limitations have already been discussed in claim 10. They are, therefore, rejected for the same reasons.

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29. As per claim 27, these limitations have already been discussed in claim 12. They are, therefore, rejected for the same reasons.

30. As per claim 28, these limitations have already been discussed in claim 16. They are, therefore, rejected for the same reasons.

31. As per claim 29, these limitations have already been discussed in claim 18. They are, therefore, rejected for the same reasons.

32. As per claim 30, these limitations have already been discussed in claim 19. They are, therefore, rejected for the same reasons.

33. As per claim 31, these limitations have already been discussed in claim 20. They are, therefore, rejected for the same reasons.

34. As per claim 32, these limitations have already been discussed in claim 21. They are, therefore, rejected for the same reasons.

35. As per claim 33, these limitations have already been discussed in claim 23. They are, therefore, rejected for the same reasons.

36. As per claim 34, the discussions in claim 1 inherit these limitations. They are, therefore, rejected for the same reasons.

37. As per claim 35, these limitations have already been discussed in claim 2. They are, therefore, rejected for the same reasons.

38. As per claim 36, these limitations have already been discussed in claim 10. They are, therefore, rejected for the same reasons.

39. As per claim 37, these limitations have already been discussed in claim 12. They are, therefore, rejected for the same reasons.

40. As per claim 38, these limitations have already been discussed in claim 16. They are, therefore, rejected for the same reasons.

41. As per claim 39, these limitations have already been discussed in claim 18. They are, therefore, rejected for the same reasons.

42. As per claim 40, these limitations have already been discussed in claim 19. They are, therefore, rejected for the same reasons.

43. As per claim 41, these limitations have already been discussed in claim 20. They are, therefore, rejected for the same reasons.

44. As per claim 42, these limitations have already been discussed in claim 21. They are, therefore, rejected for the same reasons.

45. As per claim 43, these limitations have already been discussed in claim 23. They are, therefore, rejected for the same reasons.

46. As per claim 44, these limitations have already been discussed in claims 1 and 2. They are, therefore, rejected for the same reasons.

47. As per claim 45, these limitations have already been discussed in claim 2. They are, therefore, rejected for the same reasons.

48. As per claim 46, these limitations have already been discussed in claim 4. They are, therefore, rejected for the same reasons.

49. As per claim 47, these limitations have already been discussed in claim 5. They are, therefore, rejected for the same reasons.

50. As per claim 49, these limitations have already been discussed in claim 7. They are, therefore, rejected for the same reasons.

51. As per claim 50, these limitations have already been discussed in claim 8. They are, therefore, rejected for the same reasons.

52. As per claim 51, these limitations have already been discussed in claim 9. They are, therefore, rejected for the same reasons.

53. As per claim 52, these limitations have already been discussed in claim 10. They are, therefore, rejected for the same reasons.

54. As per claim 53, these limitations have already been discussed in claim 11. They are, therefore, rejected for the same reasons.

55. As per claim 54, these limitations have already been discussed in claim 12. They are, therefore, rejected for the same reasons.

56. As per claim 55, these limitations have already been discussed in claim 13. They are, therefore, rejected for the same reasons.

57. As per claim 56, these limitations have already been discussed in claim 14. They are, therefore, rejected for the same reasons.

58. As per claim 57, these limitations have already been discussed in claim 15. They are, therefore, rejected for the same reasons.

59. As per claim 58, these limitations have already been discussed in claim 16. They are, therefore, rejected for the same reasons.

60. As per claim 59, these limitations have already been discussed in claim 17. They are, therefore, rejected for the same reasons.

61. As per claim 60, these limitations have already been discussed in claim 20. They are, therefore, rejected for the same reasons.

62. As per claim 61 these limitations have already been discussed in claim 21. They are, therefore, rejected for the same reasons.

63. As per claim 62, these limitations have already been discussed in claim 22. They are, therefore, rejected for the same reasons.

64. As per claim 63, these limitations have already been discussed in claim 23. They are, therefore, rejected for the same reasons.

Claims 6 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mueller in view of AAPA as applied to claims 1-5 and 44-46, respectively, above, and further in view of Townsend et al (U.S. Pub. 2004/0030246).

65. As per claim 6, Mueller and AAPA do not teach verifying the calibration includes visually inspecting the selected co-located points for misalignment within their respective two-dimensional images.

However, Townsend et al teach this feature (p. 1, paragraph 0010, and the last 7 lines of this paragraph.

It would have been obvious to one of ordinary skill in the art to combine the teachings of Mueller, AAPA, and Townsend et al. Townsend et al's teachings would have provided an interactive method to align images due to demand for accurate localization of image

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mapping where the low resolution morphology is insufficient to identify co-located points (p. 1, paragraph 0010, first and last 7 lines of this paragraph).

66. As per claim 48, these limitations have already been discussed in claim 6. They are, therefore, rejected for the same reasons.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cuong V. Luu whose telephone number is 571-272-8572. The examiner can normally be reached on Monday-Friday 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah, can be reached on 571-272-2279. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. An inquiry of a general nature or relating to the status of this application should be directed to the TC2100 Group receptionist: 571-272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CVL


KAMINI SHAH
SUPERVISORY PATENT EXAMINER